

WHAT IS CLAIMED IS:

1. A viral vector having at least one interfering genetic element and comprising at least one transcription unit, wherein at least one insulating sequence is located 5' to the transcription initiation site of said transcription unit and 3' to said interfering genetic element.
2. The viral vector of claim 1 wherein said insulating sequence is located no more than 3000 nucleotides 5' to the transcription initiation site of said transcription unit.
3. The viral vector of claim 1 wherein said transcription unit is the first transcription unit from the 5' end of said viral vector.
4. The viral vector of claim 1 wherein said insulating sequence is a termination signal sequence.
5. The viral vector of claim 4 wherein the termination signal sequence is a polyadenylation signal sequence.
6. The viral vector of claim 5 wherein the polyadenylation signal sequence is the SV40 late polyadenylation signal sequence.
7. The viral vector of claim 5 wherein the polyadenylation signal sequence is the SV40 early polyadenylation signal sequence.
8. The viral vector of claim 1 further comprising a therapeutic gene.
9. A viral vector particle comprising the viral vector of claim 1.
10. A eukaryotic cell transfected with the viral vector particle of claim 9.
11. The vector of claim 1 which is an adenoviral vector.

12. The adenoviral vector of claim 11 wherein the vector construct comprises an adenoviral 5'ITR, an adenoviral 3'ITR and an adenoviral packaging signal.
13. The adenoviral vector of claim 11 wherein the interfering genetic element is located within the 5'ITR.
14. The adenoviral vector of claim 11 wherein the interfering genetic element is located between -141 and -305 relative to the E1a transcription initiation site at +1.
15. The adenoviral vector of claim 11 further comprising a deletion 5' to the termination signal sequence.
16. The adenoviral vector of claim 15 comprising a deletion in the packaging signal 5' to the termination signal sequence such that the packaging signal becomes non-functional.
17. The adenoviral vector of claim 15 comprising a deletion 5' to the termination signal sequence wherein the deletion spans at least nucleotides 189 to 551.
18. The adenoviral vector of claim 17 comprising a deletion 5' to the termination signal sequence wherein the deletion spans at least nucleotides 103 to 551.
19. The adenoviral vector of claim 11 wherein the packaging signal is located 3' to the termination signal sequence.
20. The adenoviral vector of claim 11 wherein the transcription unit comprises a gene essential for replication.
21. The adenoviral vector of claim 20 wherein the gene essential for replication is selected from the group consisting of E1a, E1b, E2 and E4 coding sequences.
22. The adenoviral vector of claim 21 wherein the gene essential for replication is selected from the group consisting of E1a and E1b coding sequences.

23. The adenoviral vector of claim 20 wherein a tissue-specific transcriptional regulatory sequence is operably linked to said gene essential for replication.
24. The adenoviral vector of claim 23 wherein said tissue-specific transcriptional regulatory sequence is a promoter or an enhancer.
25. The adenoviral vector of claim 24 wherein said promoter is selected from the group consisting of E2F, CEA, MUC1/DF3, alpha-fetoprotein, erb-B2, surfactant, tyrosinase, PSA, TK, p21, hTERT, hKLK2, probasin and cyclin gene derived promoters.
26. The adenoviral vector of claim 24 wherein said enhancer is selected from the group consisting of DF3, breast cancer-specific enhancer, viral enhancers, and steroid receptor enhancers.
27. The adenoviral vector of claim 11 further comprising a deletion in the E3 region.
28. The adenoviral vector of claim 11 further comprising a therapeutic gene.
29. An adenoviral vector particle comprising the adenoviral vector of claim 11.
30. A eukaryotic cell transfected with the adenoviral vector particle of claim 29.
31. A method of reducing the transcription level of a transcription unit in a viral vector caused by an interfering genetic element which displays enhancer or promoter activity in relation to said transcription unit, comprising the steps of identifying a suitable insulating sequence and inserting said insulating sequence into said viral vector 5' to the transcription initiation site of said transcription unit.
32. The method of claim 31 wherein said insulating sequence is located no more than 3000 nucleotides 5' to the transcription initiation site of said transcription unit.
33. The method of claim 31 wherein said insulating sequence is a termination signal sequence.

34. The method of claim 33 wherein the termination signal sequence is a polyadenylation signal sequence.
35. The method of claim 34 wherein the polyadenylation signal sequence is the SV40 late polyadenylation signal sequence.
36. The method of claim 34 wherein the polyadenylation signal sequence is the SV40 early polyadenylation signal sequence.
37. The method of claim 31 wherein the vector construct further comprises a therapeutic gene.
38. The adenoviral vector of claim 20 further comprising a therapeutic gene.
39. The adenoviral vector of claim 38, wherein said therapeutic gene is a cytokine.
40. The adenoviral vector of claim 39, wherein said cytokine is GM-CSF.